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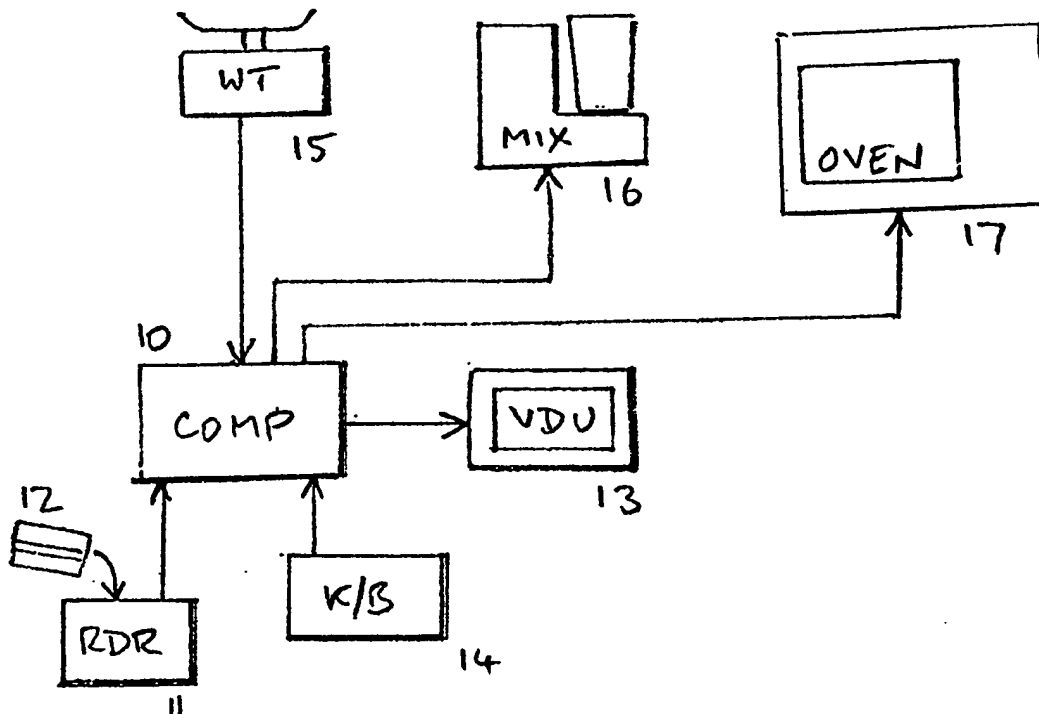
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(56) Documents cited  
GB 2024455 A US 4807169 A US 4649810 A  
US 4503502 A US 4339646 A

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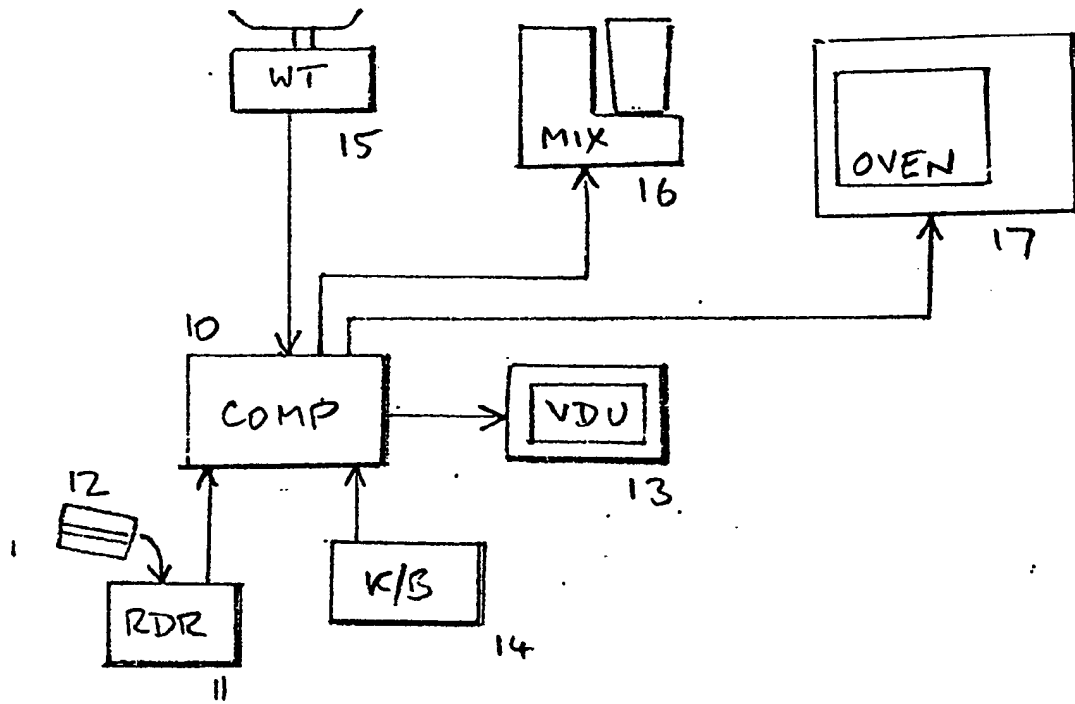
(54) Food preparation and cooking system

(57) Food preparation and cooking apparatus comprises computer means (10) adapted to have a recipe entered therein e.g. from a magnetic card 12 and having display means 13 for displaying (by instructions, progress charts, and alarms) successive steps of the recipe. Cooking devices such as a weighing machine 15, mixer 16, and oven 17 are coupled to the computer, to signal thereto the progress of the cooking and to be controllable in dependence on the recipe. The ingredients may be scaled and the cooking times and conditions adjusted accordingly. Recipe input is also possible by electronic card or floppy disc.



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## Cooking System

The present invention relates to cooking apparatus.

There is a wide range of cookery apparatus or devices, including weighing machines, ovens of various kinds (conventional, microwave, &c), boiling rings and plates, food mixers and processors, &c. These have a correspondingly large range of methods of control. Thus some are purely manually controlled (eg a boiling ring); some have a very simple automatic control (eg an electric kettle which switches itself off when it boils, or an oven with a thermostat); and some have electronic control of varying degrees of elaboration (eg a microwave cooker which may be programmed to turn on at a predetermined time and for a predetermined time at a predetermined power level).

The cooking of most dishes involves following a recipe of considerable complexity, including such things as weighing or otherwise measuring out suitable quantities of various ingredients and several processing steps (such as beating, mixing, initial cooking, further mixing, further cooking, &c). The publishing of such recipes is a large industry.

The principles of cooking are generally understood, but it is well recognized that there are many levels of complexity. Hence most cooks acknowledge a fairly well-defined level of complexity beyond which they are cautious of venturing.

The general object of the present invention is to provide means whereby cooking, particularly of more complex dishes, is simplified.

According to the present invention there is provided cooking apparatus comprising computer means adapted to have a recipe entered therein and having display means for displaying successive steps of the recipe, and at least one cooking device coupled to the computer.

Cooking apparatus embodying the present invention will now be described, by way of example, with reference to the drawing, which is a block diagram of the apparatus.

A computer 10 has coupled thereto a card reader 11 for reading magnetic cards 12, a display unit 13, and a keyboard 14. Also coupled to the computer are a weighing machine 15, a food mixer and processor 16, and a microwave oven 17.

The system is intended to be used in conjunction with a set of cards each of which is concerned with a different dish or recipe. The user selects the card 12 for the desired recipe, and passes it through the card reader 11. The magnetic stripe on the card is thereby read and its contents are loaded into the computer 10.

The computer then causes the steps of the recipe to be displayed in sequence on the display unit 13. (Obviously several steps may be displayed together.) The user follows the instructions for the various steps in the appropriate order.

Certain of these steps involve using one or more of the various cooking devices 15 to 17. Thus the initial steps of the recipe may involve weighing out various ingredients; this may be followed by one or more mixing or blending steps; and these may be followed by a cooking step. For each of the steps involving the use of a cooking device, the computer effects the appropriate control of the cooking device in addition to displaying the step on the display unit 13.

Thus for the first weighing, the computer monitors the initial weight on the scales 15 (which may be eg the weight of an empty bowl), adds the weight of the first ingredient to this to compute the weight to be aimed at, issues an instruction on the display unit 13 for the ingredient to be added to the bowl on the scales 15 and its weight, and indicates when that desired weight has been added. The user will then be prompted to enter an acknowledgement on the keyboard 14, upon which the next instruction will be displayed.

Assuming that this next instruction involves using the mixer 16, the computer will then prompt the user (again by means of the display unit 13) to set up the mixer 16 and enter an acknowledgement (again by means of the keyboard 14). The computer will then turn the mixer 16 on for the appropriate interval.

When the recipe has progressed to the point where the mixture is to be cooked, the computer will again prompt the user to put the mixture in the cooker 17 and turn the cooker on for the appropriate period and at the appropriate temperature or power level in response to an acknowledgement of the prompt.

The computer 10 and associated units 11 to 13 may be a conventional computer such as a personal computer, or may be designed specifically for cooking control (eg of limited size, proof against spills of foodstuffs, &c). If the computer is designed specifically for this purpose, then it may be partially, or wholly built into one of the cooking devices, such as the cooker.

If the computer is of conventional type, it may obviously use a disc drive instead of (or in addition to) the card reader. Further, an electronic card reader may be used in place of the magnetic card reader; this has the advantage that several recipes can be stored on an electronic card, while the storage capacity of a magnetic card tends to be restricted. Instead of a card reader, other types of data entry device can of course be used, such as a bar code or other optical reader. Data can of course also be entered by means of the keyboard.

The computer may be coupled to the cooking devices 15 to 17 by means of a suitable common bus to which all the devices are coupled (in which case the devices will obviously require appropriate identification numbers). It may be coupled to any number of devices from one upwards.

In the system described, the computer receives information from the scales 15 and sends information to the mixer 16 and cooker 17. In general, the cooker may both send information to and receive information from a device. Thus if the scales 15 have an electrical display, the computer may set the zero point of the display repeatedly, so that the desired quantities of the various ingredients can be measured readily, or may set the display so that it reaches zero when the desired quantity has been added to the bowl on the scales.

The mechanical resistance experienced by the mixer 16 will in general vary as its mixing or other processing proceeds, and this mechanical resistance will be reflected in a corresponding change of electrical power which it consumes and change of speed at which it runs. The computer may therefore similarly sense

the current through the mixer 16 and/or its speed and control or terminate its operation accordingly. Similarly, the computer may monitor the progress of cooking in the cooker 17 and control the cooker accordingly.

The computer may be arranged to display the progress of some or all of the various stages of the cooking (weighing, mixing, cooking, &c) by means of a bar graph display, in which the full length of the display area represents the totality of the relevant stage (eg the total weight to be added or the total time for mixing or cooking) and the length of the bar represents the extent to which that stage has progressed. (Obviously, a clock-face or pie chart display may be used instead.)

Depending on the particular cooking devices involved, one or more of them may not be coupled to the computer. In such a case, the computer will issue appropriate instructions on its display unit when such devices are to be used, and will await acknowledgement by the cook that those instructions have been carried out before proceeding to the next stage of the recipe.

The computer preferably also includes an audible signal generator (not shown), which gives an alarm when the current stage (eg adding an ingredient to the bowl on the scales 15, mixing, cooking, &c) has been completed.

The computer may be arranged to scale the ingredients and adjust the cooking times and conditions accordingly. For example, if a recipe is for 4 people and the cook wants to serve 3, the computer may reduce the quantities of the various ingredients by 25%; or if the amount of some particular ingredient is predetermined (eg the weight of an egg, which can vary quite widely but is not adjustable), it may adjust the required amounts of other ingredients accordingly.

The computer may also adjust the cooking times and conditions in dependence on the characteristics of the particular cooking devices (eg adjusting the cooking time in a microwave cooker in dependence on its power rating).

## Claims

- 1 Cooking apparatus comprising computer means adapted to have a recipe entered thereinto and having display means for displaying successive steps of the recipe, and at least one cooking device coupled to the computer.
- 2 Cooking apparatus according to claim 1 including a weighing machine forming a cooking device.
- 3 Cooking apparatus according to either previous claim including a food mixer and processor forming a cooking device.
- 4 Cooking apparatus according to claim 3 wherein the computer senses the resistance experienced by the food mixer and processor.
- 5 Cooking apparatus according to any previous claim including an oven forming a cooking device.
- 6 Cooking apparatus according to claim 5 wherein the computer senses the progress of the cooking in the oven.
- 7 Cooking apparatus according to any previous claim wherein the computer has coupled thereto a reader device for reading record devices.
- 8 Cooking apparatus according to any previous claim wherein the record devices are magnetic cards.
- 9 Cooking apparatus according to any one of claims 1 to 7 wherein the record devices are electronic cards.
- 109 Cooking apparatus according to any one of claims 1 to 7 wherein the record devices are floppy discs.
- 11 Cooking apparatus according to any previous claim wherein the computer is at least partially built into one of the cooking devices.

12 Cooking apparatus according to any previous claim wherein the computer includes a keyboard for manual entry of data.

13 Cooking apparatus according to any previous claim wherein the computer includes a display device adapted to display in analog form the manner in which the cooking or a stage thereof is progressing in time.

14 Cooking apparatus according to any previous claim wherein the computer includes an audible signal generator.

15 Cooking apparatus according to any previous claim wherein the computer is arranged to scale the ingredients and adjust the cooking times and conditions accordingly.

16 Cooking apparatus according to any previous claim wherein the computer is arranged to adjust the cooking times and conditions in dependence on the characteristics of the particular cooking devices.

17 Any novel and inventive feature or combination of features specifically disclosed herein within the meaning of Article 4H of the International Convention (Paris Convention).

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

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**Relevant Technical fields**

- (i) UK Cl (Edition K ) G3N NGBA, NGA9, NGBX, NGL,  
 NG1A4 A2B BKC
- (ii) Int Cl (Edition 5 ) G05B 19/03, 19/12, 19/16  
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**Search Examiner**

P MARCHANT

**Databases (see over)**

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

**Date of Search**

31 MARCH 1992

Documents considered relevant following a search in respect of claims 1 TO 16

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2024455 A (SHARP) see especially page 1 lines 43-48, page 2 lines 34-37	1, 5, 7, 8, 12
X	US 4807169 (OVERBECK) see especially column 2-3	1, 10, 12, 14
X	US 4649810 (WONG) see especially column 2 line 62 - column 3 line 15	1, 3, 11, 12
X	US 4503502 (CHAPIN) see especially column 19 lines 20-22, column 20 lines 53-69	1, 3, 11, 12
X	US 4339646 (SHARP) whole document	1, 5, 7, 8, 11, 12

Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

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